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THE FOURTEENTH *AMITHAO* THOMSON, 1878 (COLEOPTERA: SCARABAEIDAE: CETONIINAE: GYMNETINI): A REMARKABLE NEW SPECIES FROM ECUADOR

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The Fourteenth *Amithao* Thomson, 1878 (Coleoptera: Scarabaeidae: Cetoniinae: Gymnetini): A Remarkable New Species from Ecuador

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Abstract

A **new species** in the Neotropical genus *Amithao* Thomson, 1878 is described from Ecuador, with supporting illustrations and a diagnosis. A revised key to the 14 species in the genus is provided along with an annotated checklist.

Key Words: taxonomy, scarab beetles, cetoniines, Neotropics

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Nature is to be found in her entirety nowhere more than in her smallest creatures.
—— Pliny

Following my revision of the Neotropical cetoniine genus *Amithao* (Ratcliffe 2013), I discovered a small series of an additional new species in this genus during a research visit to the collections of the Museo de Zoología de la Pontificia Universidad Católica del Ecuador in Quito, Ecuador, in January 2017. These specimens supplemented a single, unidentified female that I previously had set aside as *incognita*. This new species is described here along with an annotated checklist and revised key to the species in the genus.

Species of *Amithao* are distinguished from those of other genera of New World Gymnetini by a distinctly bilobed and/or emarginate clypeal apex, frons lacking armature that is present in most species of related *Cotinis* Burmeister and males of *Allorrhina* Burmeister, and, in lateral view, a dorsoventrally flattened, attenuate or bluntly rounded mesometasternal process that is parallel to the ventral axis of the body. Only three other New World gymnetine genera possess a distinctly emarginate or bilobed clypeal apex: *Desicasta* Thomson, *Guatemalica* Neervoort van de Poll, and *Hadrostica* Kraatz. Species in these genera have a mesometasternal process that is, in lateral view, either enlarged, subrectangular, with a bulbous apex, and deflected obliquely downwards (*Desicasta*) or short, attenuate, and curving downwards and then recurving upwards at the apex (*Guatemalica*, *Hadrosticta*). Some species of *Hologymnetis* (all species are velutinous) have an emarginate clypeal apex (not bilobed), but they all lack a prosternal "throat spur," a distinguishing character for the genus since all other New World gymnetines possess this character.

Species of *Amithao* are known from central Mexico to Venezuela, Colombia, and Ecuador, with two species found in the West Indies. All species of *Amithao* are primarily diurnal, although some species are occasionally attracted to lights at night. The adults are found from near sea level to 2,500 m and usually attracted to ripe fruits placed in traps. Adult activity seems to coincide with the rainy season, although additional data are needed to verify this for all species. Only one larva, that of *Amithao haematopus* (Schaum), is described (Morón and Arce 2002). The larvae were found with the remnants of dead adult females in the axillary folds of leaves of the epiphyte *Acmaea* sp. (Bromeliaceae) in Chiapas, Mexico.

Material and Methods

The species description is based on the following characteristics: length from apex of pronotum to apex of elytra (the head may or may not be deflexed and, if measured, could give a misleading length); width across humeri; color and markings; interocular width (number of transverse eye diameters across the frons); form and sculpturing of the head, pronotum, elytra, and pygidium; form of the antennae; form of the protibia; form of the mesometasternal process; sculpturing of the abdominal ventrites; and form of the male parameres. Punctures are considered simple unless otherwise noted. Minute punctures are generally not seen with 12.5X magnification but are easily seen with 50X magnification. Small punctures are easily seen with 12.5X magnification and can be seen with the naked eye. Large punctures are easily seen without the aid

of instruments. Sparse punctures are characterized by numerous puncture diameters between them. Punctures moderate in density have 3–5 puncture diameters between them. Dense punctures have only 1–2 puncture diameters between them or less.

The sex of *Amithao* adults can usually be determined using external characters. The protibia in males is relatively slender with usually one or two lateral teeth (rarely three), whereas in females the protibia is broader and tridentate. In lateral view, males have an abdomen slightly to distinctly concave, whereas in females the abdomen is flat to slightly convex.

For this new species description, label data is quoted verbatim, A single slash (/) indicates a break between lines on the same label, and a double slash (//) indicates a different label. Geographical localities are arranged alphabetically by province in Ecuador and then alphabetically by locality within each province. I use the phylogenetic species concept as outlined by Wheeler and Platnick (2000). This concept defines species as the smallest aggregation of (sexual) populations diagnosable by a unique combination of character states.

Amithao cotopaxicus Ratcliffe, new species
(Figs. 1–4)

Type Material. Holotype male labeled: "CUADOR" [ECUADOR] "1800m / OTOPAXI" [COTOPAXI] / "TONGA" [OTONGA] / "OCT 1993 / ONORE" [G. ONORE] // "QCAZ I / 224528" and with my red holotype label. Allotype female labeled: "Ecuador / Cotopaxi / Las Pampas / x-1981 / lg. G. Onore // QCAZ I / 224527" and with my red allotype label. Paratypes labeled: "ECUADOR COTOPAXI / SAN FRANCISCO DE LAS / PAMPAS 1500 m / 8DIC1993 GOnore // QCAZ I / 224530" (1 male). "Ecuador / Rio Tocachi / Tocachi / ix. 1981 / lg. G. Onore" (1 male). "ECUADOR Cotopaxi / Las Pampas1325m / 21Oct1995 LdelaTorre // QCAZ I / 224529" (1 female). "ECUADOR Cotopaxi / Las Pampas1325m / 18 APR1996 LdelaTorre // exlarvae3era edad 11FEB1995 / expupae 19Dic1995 / imago18apr1996 QCAZ I / 224521" (1 female). "ECUADOR Cotopaxi / Las Pampas1325m / 7OCT1995 LdelaTorre // ex ovo 11DEC1994 / ex larvae 1ra. edad: 7DEC1994 / ex larvae 2da. edad.: 14DEC1994 / ex larvae 3ra. edad: 14JAN1995 / ex pupae: 8JUN1995 / imago: 7OCT1995 / QCAZ I / 224525" (1 female). "ECUADOR Cotopaxi / Las Pampas1325m / 20OCT1995 LdelaTorre // ex ovo 11DEC1994 / exlarvae1raedad: 9DIC1994 / ex larvae2daedad23DIC1994 / ex larvae3raedad 14JAN1995 / expupae 3JUL1995 / imago 20OCT1995 / QCAZ I / 224531" (1 female). "Ecuador / Pichincha / El Cortijo 550m / 15-Dec-93 / lg. S. Burneo" (1 female). "Ecuador Tinalandia / nr. Santo Domingo de / Los Colorados / Dec. 7 1981 / E. I. Schlinger" (1 female). "ECUADOR: Pichincha / Prov., 12 km. E. Sta. / Domingo, Tinalandia / 2000'; 4-6-X-1988 / S. Dunkle" (1 female).

Holotype and allotype are deposited at the University of Nebraska State Museum, Lincoln, NE, USA (UNSM). Paratypes are deposited at the Museo de Zoología de la Pontificia Universidad Católica del Ecuador, Quito, Ecuador (QCAZ) and the Brett C. Ratcliffe Collection, Lincoln, NE, USA (BCRC).

Holotype. Male. Length 21.2 mm; width across humeri 11.8 mm. **Head:** Color velutinous black except for weakly shiny clypeal apex. Lateral margins of clypeus distinctly elevated. Surface of frons and clypeus with large, moderately dense punctures; punctures on frons with sparse, long, black setae. Clypeal apex broadly subtruncate, weakly emarginate. Eyes large, interocular width equals 4.0 transverse eye diameters. Antenna with 10 antennomeres, club distinctly longer than antennomeres 2–7. **Pronotum:** Color velutinous black. Surface with large, moderately dense punctures, punctures becoming sparse on center base. Sides with thick, complete marginal bead. **Elytra:** Color velutinous black and with slender, velutinous pale yellow band extending from behind humerus to elytral suture (Fig. 1). Surface with 2 weakly elevated, parallel costae terminating at weak apical

Fig. 1. *Amithao cotopaxicus*, dorsal habitus.

umbone; moderate to large punctures on lateral third of black area and minute, sparse punctures on yellow area. Apices at suture subquadrate. **Pygidium:** Color dull black with sparse, yellow punctures on each lateral margin. Surface densely, concentrically rugose, setigerous; setae short, dense, black. **Venter:** Metasternum and metacoxae weakly shiny black with large, dense, yellow and black punctures. Mesometasternal process, in lateral view, short, parallel to ventral axis of body, apex bluntly rounded (Fig. 2). Abdominal ventrites weakly shiny black and with slender, yellow line along anterior margin either side of middle of sternites 2–5. Surface with large, moderately dense punctures on lateral thirds of sternites 1–5; central third with a few sparse punctures; longitudinal depression at center extending through sternites 1–5. Setae of mentum and procoxae black. **Legs:** Protibia slender, with single, apical tooth. **Parameres:** Form short, apices subacutely rounded, and curved inwards towards one another (Fig. 3). Basal piece longer than parameres (Fig. 4).

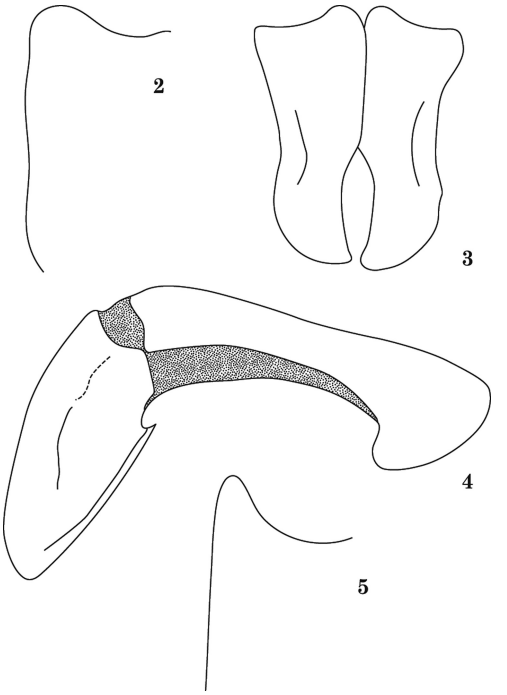
Allotype. Female. Length 24.5 mm; width across humeri 13.6 mm. Differs from the holotype in the following respects: **Head:** Surface of both frons and clypeus with sparse, long, black setae. Clypeal apex subtruncate, broadly, shallowly emarginate. Eyes large, interocular width equals 4.0 transverse eye diameters. **Elytra:** Velutinous pale yellow band on lateral margin broken into flecks and spots on median edge. **Venter:** Color entirely shiny black. Metasternum and metacoxae weakly shiny black with large, dense, yellow and black punctures. Abdominal ventrites lacking longitudinal depression at center. **Legs:** Protibia broad, tridentate.

Variation. Males (2 paratypes). Length 20.1–20.7 mm; width across humeri 11.7–11.8 mm. The paratypes do not significantly differ from the holotype. Females (7 paratypes). Length 20.7–25.3 mm; width across humeri 12.3–14.0 mm. As allotype except in the following respects: **Head:** Interocular width equals 4.0–4.5 transverse eye diameters. **Venter:** Abdominal ventrite 5 with slender, yellow line along anterior margin either side of middle in 2 specimens.

Etymology. The gender of *Amithao* is masculine (see Etymology in Ratcliffe 2013), and the specific epithet is an adjectival descriptor derived from the name Cotopaxi, a province name and a prominent stratovolcano in Ecuador. Most of the specimens in the type series came from the province of Cotopaxi.

Distribution. *Amithao cotopaxicus* is known from Ecuador (Fig. 6).

Locality Records. Eleven specimens deposited at QCAZ, UNSM, and BCRC. **ECUADOR (11).** COTOPAXI (7): Las Pampas, Otonga. PICHINCHA (1): El Cortijo. SANTO DOMINGO DE LOS TSÁCHILAS (3). Santo Domingo de los Colorados, Tinalandia (12 km E. Santo Domingo de los Colorados), Toachi.



Figs. 2–5. *Amithao* species. **2)** Short, blunt mesometasternal process (lateral view) of *A. cotopaxicus*; **3)** Caudal view and **4)** Lateral view of parameres of *A. cotopaxicus*; **5)** Example of slender, attenuate, mesometasternal process (lateral view) as seen in *A. haematopus*.

Temporal Distribution. April (1), September (1), October (6), December (3).

Diagnosis. Only four species of *Amithao* have a velutinous dorsal surface, whereas all other species are shiny. *Amithao incertus* (Gory and Percheron) is a small species (less than 17 mm) that occurs only on Hispaniola in the West Indies. *Amithao lafertei* (Thomson) is black with numerous, small, yellowish white speckles (punctures) on the pronotum and elytra and found in Panama and Colombia. *Amithao marginicollis* (Burmeister) is another small species (also less than 17 mm) that is found in Mexico and distinctively marked with cretaceous bands and spots as in no other species of *Amithao*. Only *A. cotopaxicus* is velutinous black with a distinctive, slender, pale yellow band along the lateral margin of each elytron, which makes it remarkably different from other species in the genus.

Aside from the width and dentation of the protibiae, males and females of *A. cotopaxicus* differ little from each other. Even the two apical spurs of the metatibiae are similarly acute in both sexes, where normally the spurs of females in other species are bluntly rounded.

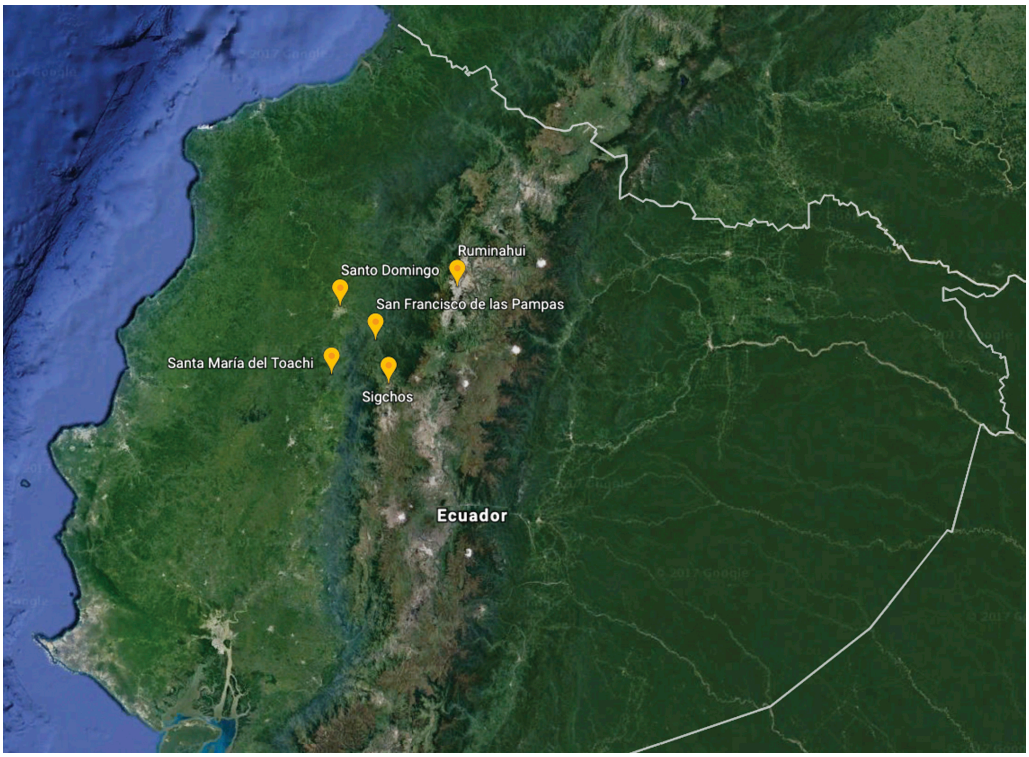


Fig. 6. Distribution map for *Amithao cotopaxicus*.

Natural History. Little is known of the life history of *A. cotopaxicus*. Label data indicate that two adults were reared from the egg stage. One specimen molted from the first instar on 7 December, the second instar on 14 December, the third instar on 14 January, and emerged from the pupa on 8 June for a development time of six months. A second specimen molted from the first instar on 9 December, the second instar on 23 December, the third instar on 14 January, and emerged from the pupa on 3 July for a development time of just over six months. These data for laboratory-reared specimens may or may not reflect development times under natural conditions.

Checklist of the Species of *Amithao*

Amithao albopictus Neervoort van der Poll, 1886. Nicaragua, Costa Rica, and Panama.

Amithao anthracinus Ratcliffe, 2013. Panama.

Amithao cavifrons (Burmeister, 1842). Mexico south to Colombia.

Amithao cotopaxicus Ratcliffe, **new species.** Ecuador.

Amithao decemguttatus (Waterhouse, 1876). Honduras to Ecuador.

Amithao decemguttatus beinlingi Nonfried, 1894 (synonym).

Amithao erythropus (Burmeister, 1842). Central Mexico to northern Costa Rica.

Cotinis moreleti Blanchard, 1850 (synonym).
Amithao splendens Nonfried, 1894 (synonym).
Desicasta nonfriedi Schoch, 1896 (synonym).
Amithao erici Mitter, 2007 (synonym).

Amithao haematopus (Schaum, 1848). Mexico to Panama.

Amithao thomsoni (Janson, 1878) (synonym).

Amithao incertus (Gory and Percheron, 1833). Hispaniola.

Amithao lafertei (Thomson, 1860). Panama and Colombia.

Amithao niveosparsus Moser, 1913 (synonym).
Amithao sparsus Casey, 1915 (synonym).

Amithao marginicollis (Burmeister, 1842). Central and southern Mexico.

Clinteria undulata Schoch, 1895 (synonym).

Amithao metallicus (Janson, 1885). Costa Rica and Panama.

Amithao pyrrhonotus (Burmeister, 1842). Central and southern Mexico.

Amithao staudingeri Schürhoff, 1935. Guatemala.

Amithao tristis (Fabricius, 1775). Jamaica.

Amithao spence (Gory and Percheron, 1833) (synonym).

Key to the Species of Adult *Amithao*

1. Dorsal surface highly lustrous, smooth, bright reddish brown or dark metallic green 2
1′. Dorsal and ventral surfaces black, brown, or green, punctate or velutinous, with or without cretaceous marks, shiny (but not highly lustrous) or opaque 4
2. Dorsal surface bright reddish brown, glossy. Venter entirely black, highly lustrous. Mexico .... ***Amithao pyrrhonotus*** **(Burmeister)**
2′. Dorsal surface metallic dark green or copper. Venter metallic dark green, copper, black, or reddish brown 3
3. Color dorsally black with a weak green or copper sheen. Pygidium and abdominal ventrites usually with cretaceous marks. Femora and coxae dark reddish brown. Pronotum on central third with moderately dense, moderately large punctures. Costa Rica and Panama .... ***Amithao metallicus*** **(Janson)**, in part
3′. Color dorsally and ventrally distinctively metallic dark green with strong copper reflections. Pygidium and abdominal ventrites never with cretaceous marks. Femora and coxae metallic copper or dark green. Pronotum on central third with sparse, small punctures. Guatemala .... ***Amithao staudingeri*** **Schürhoff**
4. Pronotum and/or elytra with cretaceous spots, speckles, or bands 5
4′. Pronotum and/or elytra without cretaceous marks 12
5. Length less than 17 mm 6
5′. Length greater than 18 mm 8
6. Male genitalia with basal piece subequal in length to parameres. Mexico .... ***Amithao marginicollis*** **(Burmeister)**
6′. Male genitalia with basal piece about 3 times longer than parameres. West Indies 7
7. Pronotum and elytra velutinous. Elytra black with 3 cretaceous spots or short bands on each lateral margin. Parameres with apices approximate. Hispaniola .... ***Amithao incertus*** **(Gory and Percheron)**
7′. Pronotum and elytra opaque or weakly shiny. Elytra black or reddish brown, if reddish brown then with numerous, small, cretaceous speckles. Parameres with apices diverging. Jamaica .... ***Amithao tristis*** **(Fabricius)**
8. Pronotum (usually) and elytra (always) velutinous, dark reddish brown to black 9
8′. Pronotum and elytra shiny. Elytra with cretaceous spots, speckles, or bands 10
9. Pronotum and elytra with numerous, small, cretaceous speckles. Panama and Colombia ..... ***Amithao lafertei*** **(Thomson)**
9′. Pronotum lacking cretaceous speckles; elytra with pale yellow band along lateral margins. Ecuador .... ***Amithao cotopaxicus*** **Ratcliffe, new species**
10. Mesometasternal process in lateral view elongate, distinctly attenuate (Fig. 5)... Honduras (?), Costa Rica, Panama, Colombia, and Ecuador .... ***Amithao decemguttatus*** **(Waterhouse)**
10′. Mesometasternal process in lateral view bluntly rounded or only weakly attenuate (as in Fig. 2) 11
11. Femora and tibiae always black. Pronotum distinctly punctate, punctures moderate in density and size. Parameres with apices bluntly rounded, curving towards one another. Nicaragua, Costa Rica, and Panama .... ***Amithao albopictus*** **Neervoort van de Poll**
11′. Femora and tibiae reddish brown or black. Pronotum with minute to small, sparse punctures, often appearing smooth. Parameres diverging from about mid-shaft, each paramere with a small tooth externoapically. Mexico to northern Costa Rica .... ***Amithao erythropus*** **(Burmeister)**, in part
12. Elytra densely, finely rugulopunctate. Color usually with olive green metallic sheen over black or coppery ground color. Each elytron with 2 distinctly elevated, parallel costae terminating at prominent apical umbone. Mexico to Costa Rica and rarely into Colombia .... ***Amithao cavifrons (*****Burmeister)**
12′. Elytra punctate. Color black or dark reddish brown, shiny, without metallic green sheen. Each elytron lacking distinctly elevated costae 13
13. Mesometasternal process in lateral view bluntly rounded, short (as in Fig. 2). Pronotum with minute to small, sparse punctures, often appearing smooth. Length less than 22 mm. Mexico to northern Costa Rica .... ***Amithao erythropus*** **(Burmeister)**, in part
13′. Mesometasternal process in lateral view narrowly attenuate, elongate (as in Fig. 5). Pronotum distinctly punctate. Length greater than 25 mm 14
14. Femora, tibiae, and coxae entirely black. Panama . . . ***Amithao anthracinus*** **Ratcliffe**
14′. Femora and/or tibiae and/or coxae reddish brown 15

15. Femora and tibiae reddish brown, coxae black. Mexico to Panama .... ***Amithao haematopus* (Schaum)**

15′. Femora and usually coxae reddish brown, tibiae black. Costa Rica and Panama .... ***Amithao metallicus* (Janson)**, in part

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